



NOAA Fleet Update

JANUARY 2015

The following update provides the status of NOAA's fleet of ships and aircraft, which play a critical role in the collection of oceanographic, atmospheric, hydrographic, and fisheries data. NOAA's current fleet of 16 ships – the largest civilian research and survey fleet in the world – and nine aircraft, are operated, managed, and maintained by NOAA's Office of Marine and Aviation Operations ([OMAO](#)). OMAO includes civilians, mariners, and officers of the United States NOAA Commissioned Officer Corps ([NOAA Corps](#)), one of the nation's seven Uniformed Services.



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Office of Marine and Aviation Operations (OMAO) and the NOAA Commissioned Officer Corps – In the News –



Below is a sampling of clips and web links to recent news items related to OMAO and the NOAA Corps.

[Strengthening Coast Guard, NOAA partnerships](#)

-Coast Guard Compass (Blog)

For more than 200 years, the Coast Guard and the National Oceanic and Atmospheric Administration, or NOAA, have collaborated in maritime resiliency, environmental sustainability and scientific research. In 2013, the Coast Guard and NOAA signed the Nation's first-ever Cooperative Maritime Strategy, which strengthened the relationship between the two services. Even more recently, in October 2014, the Fleet Plan and Officer Exchange memorandum was signed, which acts as a supplemental document to the earlier strategy. But the partnerships between the Coast Guard and NOAA stretch farther back than this agreement. For example, this past spring two Coast Guard officers spent just over two weeks aboard the 228-foot NOAA Fishery Survey Vessel *Rueben Lasker*. The main intent of the time spent aboard was to strengthen the partnerships between the two services and share expertise related to maritime missions...

[NOAA looks to build the next generation of hurricane planes](#)

-Tampa Tribune

NOAA is looking to develop the next generation of Kermit and Miss Piggys. To that end, it has put out a solicitation looking for companies that can help figure out what kinds of sensors and other data-gathering equipment will be needed in the future, according to NOAA CDR Devin Brakob, a P-3 navigator and aviation specialist with NOAA's platform acquisition division. I asked Brakob what he, as a crew member, would like to see improved, but he demurred, saying that at this point, it is up to the scientists. And really, that's what it is all about. The types of sensors and other data-gathering equipment will determine what kind of airplane replaces Kermit and Miss Piggy, says Jim McFadden, chief of programs at NOAA's operations center, based at MacDill...

[Change of Command of NOAA Research Vessel Follows Tradition](#)

-NOAA Fisheries Northeast Science Center

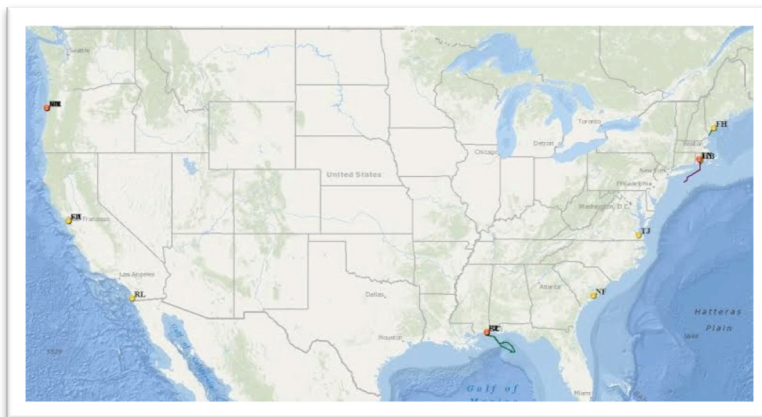
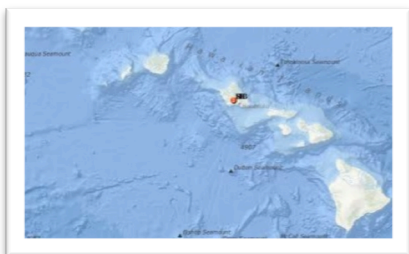
On December 17, Lieutenant (Junior Grade) Douglas Pawlishen assumed command of the NOAA research vessel *Gloria Michelle*, relieving Lieutenant Anna-Elizabeth Villard-Howe as Officer in Charge (OIC) during a traditional change of command ceremony. *Gloria Michelle*, a 72-foot fisheries research stern trawler, conducts the spring and fall groundfish surveys for the Massachusetts Division of Marine Fisheries and the summer Gulf of Maine northern shrimp survey. The vessel deploys in various research projects for both NOAA Fisheries Service and other scientific research organizations in the Northeast. LTJG Pawlishen had been the Junior Officer in Charge (JOIC) since he reported for duty in February 2014 at the Northeast Fisheries Science Center (NEFSC)'s Woods Hole Laboratory...



OMAO's Ships and Centers



OMAO's Ship Tracker (screen shot below) shows information about the location - present and past - of our fleet of research and survey ships. <http://shiptracker.noaa.gov>



OMAO's ships and related Marine Centers are listed below based on the geographical location of the vessels' homeports starting in the Northeast and ending in the Pacific.

New Castle, NH

NOAA Ship *Ferdinand R. Hassler*

Commanding Officer: CDR Marc Moser

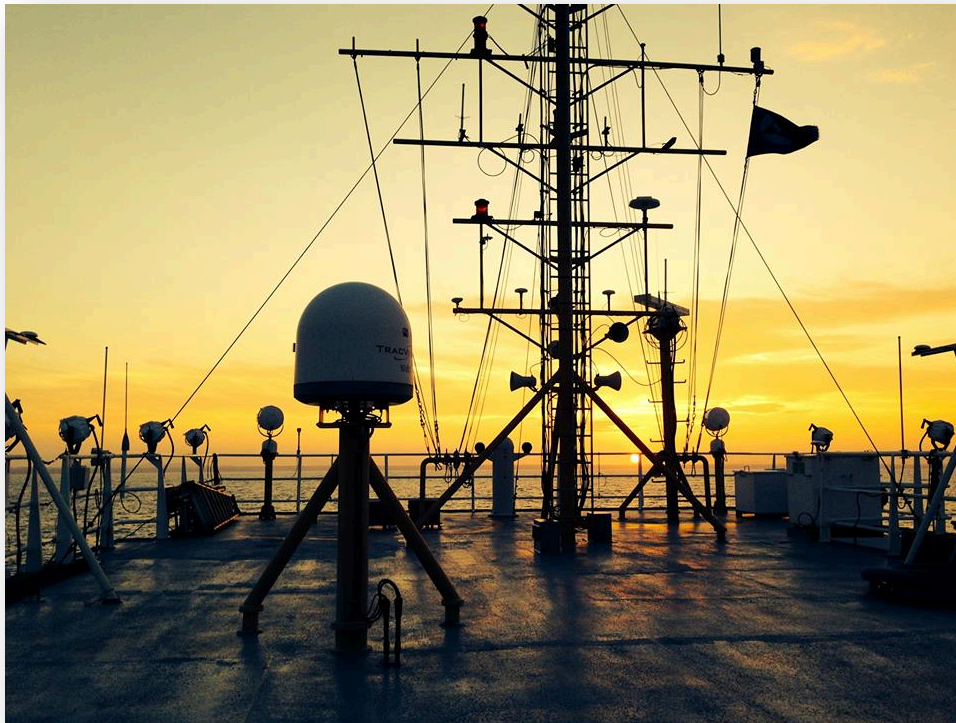
Primary Mission Category: Hydrographic Surveys

DEPART: New Castle, NH

ARRIVE: New Castle, NH

Project: Hydrographic Survey Operations in the Gulf of Maine

Objectives: To support safe navigation through the acquisition and processing of hydrographic survey data for updating nautical charts and by the identification and dissemination of dangers to navigation as identified during the course of survey operations.



Although it is January, some of our ships are still going out to work in the harsh winter seas. Here's a shot of [NOAA Ship Ferdinand R. Hassler's](#) flybridge at sunset. She is conducting a hydrographic survey project in the Gulf of Maine.

[Photo: LTJG John Kidd, NOAA]

Woods Hole, MA (currently docks in Newport, RI)

NOAA Ship Henry B. Bigelow

Commanding Officer: CDR G. Mark Miller

Primary Mission Category: Fisheries Research

DEPART: Newport, RI

ARRIVE: Newport, RI

Project: Sea Trials and Ship Shakedown

Objectives: Conduct sea trials to measure the vessel's performance and general seaworthiness after repair period. Conduct a dynamic positioning system test, patch test, and calibration of all ship systems.

Davisville, RI

NOAA Ship *Okeanos Explorer*

Commanding Officer: CDR Mark Wetzler

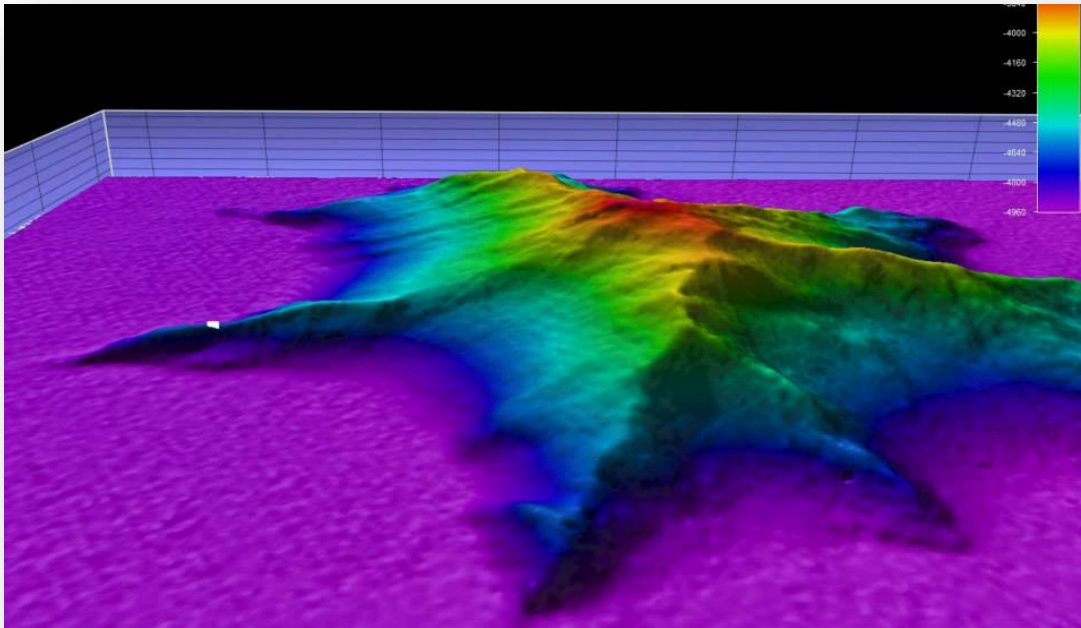
Primary Mission Category: Oceanographic Exploration and Research

DEPART: Norfolk, VA

ARRIVE: North Kingstown, RI

Project: Sea trials and transit

Objectives: Conduct sea trials to measure the vessel's performance and general seaworthiness after repair period and transit to homeport.



NOAA Ship *Okeanos Explorer* is a mapping machine! In 2014, more than 108,000 square kilometers of seafloor was mapped with high-resolution multibeam sonar. While the *Okeanos Explorer* live video feeds often steal the limelight, the mapping work provides the baseline information needed to explore with the Remotely Operated Vehicle (ROV), making sure the ship goes to the right locations and maximizes time and resources.

The uses of mapping data are far reaching. Mapping data can lead to new discoveries such as the hundreds of previously unknown gas seeps identified last year along the Atlantic Coast; fill critical gaps in our knowledge of the seafloor- in 2014, *Okeanos Explorer* completed a partner project to map every major U.S. deep-sea canyon from Cape Hatteras, NC, to the U.S.-Canada border; and even provide information needed to assess coastal hazards- tsunami-like surges along the Atlantic Coast that are still of unknown origin.

Learn more about NOAA Ship *Okeanos Explorer*'s mapping accomplishments during 2014 through their Annual Report: <http://oceanexplorer.noaa.gov/annual-report-2014/americas-ship-for-ocean-exploration.html>

Norfolk, VA

NOAA Ship *Thomas Jefferson*

Commanding Officer: CAPT James Crocker / CAPT Shepard Smith

Primary Mission Category: Hydrographic Surveys

Ship Status: Alongside Marine Operations Center – Atlantic, Norfolk, VA, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

OMAO'S MARINE OPERATIONS CENTER – ATLANTIC (MOC-A)

CAPT Anne Lynch, Commanding Officer MOC-A

MOC-A serves as a homeport for one NOAA ship, and manages the day-to-day operations and provides administrative, engineering, maintenance, and logistical support for the research and survey ships in NOAA's Atlantic fleet. Each year these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

Charleston, SC

NOAA Ship *Nancy Foster*

Commanding Officer: LCDR Jeffrey Shoup

Primary Mission Category: Oceanographic Research, Environmental Assessment

Ship Status: Alongside Charleston, SC, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

NOAA Ship *Ronald H. Brown*

Commanding Officer: CAPT Robert Kamphaus

Primary Mission Category: Oceanographic Research, Environmental Assessment

DEPART: Honolulu, HI

ARRIVE: San Diego, CA

Project: CalWater 2 Study

Objectives: Characterize air-sea interaction characteristics of the marine boundary layers in both background and storm conditions. This will include: characterizing air-sea fluxes and aerosol production in atmospheric rivers (ARs), characterizing oceanic and atmospheric mixed layer response to ARs, and characterizing the size-resolved properties of boundary layer aerosols in the open ocean versus the coastal regime.

Pascagoula, MS

NOAA Ship *Oregon II*

Commanding Officer: Master Dave Nelson

Primary Mission Category: Fisheries Research

Ship Status: Alongside Pascagoula, MS, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

NOAA Ship *Gordon Gunter*

Commanding Officer: Master Don Pratt

Primary Mission Category: Fisheries Research

Ship Status: Alongside Pascagoula, MS, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

NOAA Ship *Pisces*

Commanding Officer: CDR Peter Fischel / CAPT Michael Hopkins

Primary Mission Category: Fisheries Research

Ship Status: Alongside Pascagoula, MS, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

San Diego, CA

NOAA Ship *Reuben Lasker*

Commanding Officer: CDR Keith Roberts

Primary Mission Category: Fisheries Research

Ship Status: The ship is alongside in San Diego, CA, due to voltage and harmonic issues within the propulsion motors and will remain alongside as solutions are developed.



Winter months mean winter maintenance for most ships in the NOAA Fleet. Here, we see [NOAA Ship Reuben Lasker](#) undergoing a Certificate of Inspection issued by the U.S. Coast Guard. The ship underwent a series of annual inspections this week to test machinery and safety gear. In these photos, officers and crew work together to deploy the embarkation ladder and test the anchor windlass.

[Photos: LT Claire Surrey-Marsden, NOAA]

Newport, OR

NOAA Ship *Rainier*

Commanding Officer: CDR E.J. Van Den Ameele

Primary Mission Category: Hydrographic Surveys

Ship Status: The ship is alongside Marine Operations Center – Pacific, Newport, OR, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

NOAA Ship *Bell M. Shimada*

Commanding Officer: CDR Brian Parker

Primary Mission Category: Fisheries Research

DEPART: Newport, OR

ARRIVE: Newport, OR

Project: Northern California Current Ecosystem Survey

Objectives: Make hydrographic measurements such as conductivity, temperature, and depth (CTD), collect water samples for chemical analyses with a Niskin bottle rosette, and collect zooplankton samples with towed plankton nets at an array of stations along transect lines extending across the Oregon, Washington, and northern California coast.

OMAO'S MARINE OPERATIONS

CAPT Eric Berkowitz, Director of Marine Operations

OMAO's Marine Operations oversees operations of the three regional Centers, including the Marine Operations Center-Pacific, Marine Operations Center-Atlantic, and Marine Operations Center-Pacific Islands.

OMAO'S MARINE OPERATIONS CENTER – PACIFIC (MOC-P)

CAPT Douglas Baird, Commanding Officer MOC-P

MOC-P serves as a homeport for two NOAA ships, and manages the day-to-day operations and provides administrative, engineering, maintenance, and logistical support for the research and survey ships in NOAA's Pacific fleet. Each year these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

Ketchikan, AK (currently docks in Newport, OR)

NOAA Ship *Fairweather*

Commanding Officer: CDR David Zezula

Primary Mission Category: Hydrographic Surveys

Ship Status: In drydock at the Bay Ship & Yacht Shipyard in Alameda, CA, for a scheduled repair period.

Kodiak, AK

NOAA Ship *Oscar Dyson*

Commanding Officer: CDR Arthur “Jesse” Stark

Primary Mission Category: Fisheries Research

DEPART: Seattle, WA

ARRIVE: Kodiak, AK

Project: CO2 Surface and Fisheries Oceanography Coordinated Investigations (FOCI) Subsurface Mooring Recover/Deploy

Objectives: In support of NOAA’s Ocean Acidification Program, NOAA will recover and deploy two surface instrumentation buoys to:

- 1.) Characterize ocean acidification (OA) conditions in S.E. Alaska and northern Gulf of Alaska.
- 2.) Conduct inter-calibration measurements near the OA observing assets in the study area, allowing inter-calibration of these autonomous assets with high quality, ship-based measurements.
- 3.) Provide calibration data needed to develop predictive models for aragonite saturation state, pH, and other important OA indicators in the California Current System, based on widely measured parameters such as salinity, temperature, and oxygen concentration.
- 4.) Provide quantitative assessment of phytoplankton, zooplankton, and harmful algal bloom activity in conjunction with OA measurements.
- 5.) Provide scientific information on OA conditions and trends for resource management and decision support.



NOAA Ship *Hi'ialakai* shown here in transit, June 2014.

Her first cruise of FY15 commences this month.

[Photo: ENS Steven Solari, NOAA]

Honolulu, HI

NOAA Ship *Hi'ialakai*

Commanding Officer: CDR Daniel Simon

Primary Mission Category: Oceanographic Research, Environmental Assessment

DEPART: Pearl Harbor, HI

ARRIVE: Pearl Harbor, HI

Project: American Samoa Reef Assessment and Monitoring Program (ASRAMP)

Objectives:

- 1.) Conduct ecosystem monitoring of the species composition, abundance, percent cover, size distribution, recruitment, and general health of the fishes, corals, other invertebrates, and algae of the shallow water (< 35 m) coral reef ecosystems of Johnston Atoll, the Phoenix Islands, the Territory of American Samoa, and the Line Islands.
- 2.) Deploy, retrieve, and/or service an array of Subsurface Temperature Recorders (STRs), Sea Surface Temperature (SST) Buoys, Autonomous Reef Monitoring Structures (ARMS), Calcification Accretion Units (CAUs), Bioerosion Monitoring Units (BMUs), Ecological Acoustic Recorders (EARs), moored Acoustic Doppler Current Profilers (ADCPs) as well as anchored arrays consisting of a portable underwater collector (PUC), ADCP, a Conductivity Temperature Pressure (CTP) recorder and a thermistor string to allow remote long-term monitoring of oceanographic and environmental conditions affecting the coral reef ecosystems of Johnston Atoll, the Phoenix Islands, the Territory of American Samoa, and the Line Islands. This effort is in support of the Coral Reef Ecosystem Integrated Observing Systems (CREIOS).
- 3.) Monitor nearshore physical and ecological factors associated with ocean acidification and general water quality, including analysis of seawater for nutrients, chlorophyll concentration, salinity, temperature, dissolved oxygen, transmissivity, total alkalinity, and dissolved inorganic carbon. These parameters will be measured via the collection of water in Niskin bottles CTD casts. Shallow-water CTDs will be conducted from small boats to a depth of ~30 m.
- 4.) Collect shallow water coral cores to examine calcification/growth rates in recent decades and assess potential early impacts of ocean acidification. Coring operations will be conducted opportunistically (as a scientific dive).
- 5.) Shipboard ADCP surveys around reef ecosystems to examine physical and biological linkages supporting and maintaining the island ecosystems.
- 6.) Collect oceanographic data utilizing ship-based measurement systems (ADCP, ThermoSalinoGraph - TSG, and the Scientific Computer System - SCS) during all transits for the duration of the project.
- 7.) Conduct investigations of marine microbial communities, including the collection of specimens via water sampling and benthic grab samples.
- 8.) Determine the existence of threats to the health of these coral reef resources from anthropogenic sources, including marine debris.

NOAA Ship *Oscar Elton Sette*

Commanding Officer: CDR Stephanie Koes

Primary Mission Category: Fisheries Research

Ship Status: Alongside Marine Operations Center – Pacific Islands, Pearl Harbor, HI, for scheduled maintenance, winter repairs, scientific data processing, crew rest, and training.

OMAO'S MARINE OPERATIONS CENTER – PACIFIC ISLANDS (MOC-PI)

CAPT Douglas Baird, Acting Commanding Officer MOC-PI

MOC-PI serves as a homeport for two NOAA ships, and manages the day-to-day operations and provides administrative, engineering, maintenance, and logistical support for the ships in NOAA's Pacific Islands' fleet.



OMAO's Aircraft



Tampa, Florida

OMAO'S AIRCRAFT OPERATIONS CENTER (AOC)

CAPT Harris Halverson, Commanding Officer AOC

The AOC, located at MacDill Air Force Base, serves as the main base for OMAO's fleet of nine aircraft and provides capable, mission-ready aircraft and professional crews to the scientific community. Whether studying global climate change or acid rain, assessing marine mammal populations, surveying coastal erosion, investigating oil spills, flight checking aeronautical charts, or improving hurricane prediction models, the AOC flight crews continue to operate in some of the world's most demanding flight regimes.

WP-3D (N42RF) – “Hurricane Hunter”

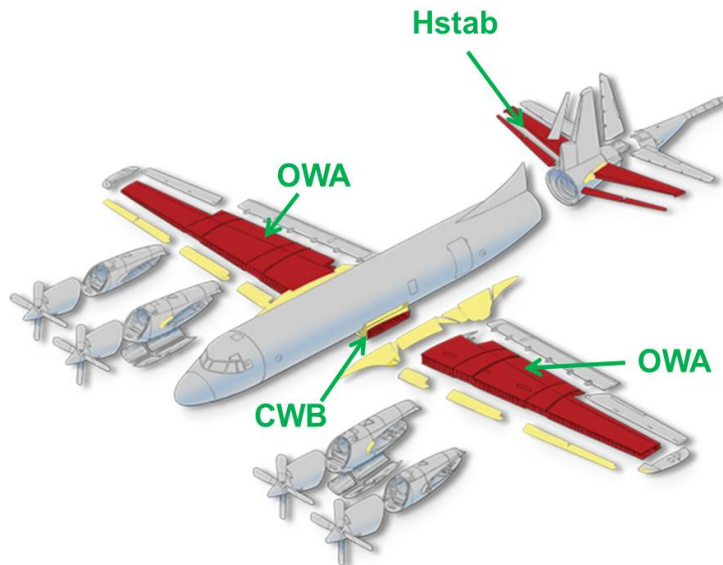
Aircraft Commander: LCDR Scott Price
Temporary Base: Halifax, Nova Scotia
Current Mission: Ocean Winds Project

Aircraft will conduct the Ocean Winds Project for NESDIS over the North Atlantic Ocean. Microwave sensors flown aboard the P-3 aircraft in limiting environmental conditions (high winds and precipitation) will improve our understanding of measurements from existing satellite sensors such as ASCAT and the Oceansat2 scatterometers, and improve the design of future satellite sensors. This will result in better use of these data by weather and ocean models and human forecasters in their decision making process. This knowledge will also greatly aid in product improvements and planning for future satellite sensors such as DFS and ASCAT follow-on.

Re-winging of N42RF is scheduled to commence in March 2015 and finish in May 2016.

Re-wing Kit Consists of:

- Outer Wing Assembly (OWA)
- Center Wing Box (CWB)
- Horizontal Stabilizer (Hstab)
- Installation



Jet Prop Commander (N45RF)

Aircraft Commander:

LCDR Patrick Didier and LTJG Kyle Salling

Current Mission:

Various locations for Snow Survey / Soil Moisture Surveys

Aircraft will conduct Snow Survey operations for the National Operational Hydrologic Remote Sensing Center (NOHRSC). The project utilizes an Airborne Gamma Radiation detector to make airborne Snow Water Equivalent (SWE) and soil moisture measurements. Airborne SWE measurements are used by NWS Weather Forecast Offices (WFO) and NWS River Forecast Centers (RFC) when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks. Survey locations will be determined based on NOHRSC tasking.

Twin Otter (N46RF)

Aircraft Commander:

LT Michael Marino and LT John Rossi

Current Mission:

Various Locations for Snow Survey/Soil Moisture Surveys

Aircraft will also conduct Snow Survey and Soil Moisture operations for the National Operational Hydrologic Remote Sensing Center (NOHRSC).

Twin Otter (N48RF)

Aircraft Commander:

LT Francisco Fuenmayor

Temporary Base:

Saint Simons Islands, GA

Current Mission:

Southeastern Right Whale Survey – Georgia coastal waters

Aircraft is conducting the Southeastern Right Whale survey out of Saint Simons Is., GA. NOAA Fisheries Service Southeast Regional Office conducts these multi-aircraft surveys annually, from South Carolina to Florida, in an effort to determine calf production, right whale distribution relative to habitat variables, and to reduce ship collisions with right whales. Surveys are flown under contract or grants to the Florida Fish and Wildlife Conservation Commission, Georgia Department of Natural Resources, New England Aquarium, and the Wildlife Trust.

Twin Otter (N56RF)

Aircraft Commander:

LTJG Kevin Doremus

Temporary Base:

Hyannis, MA

Current Mission:

Northeast Atlantic Marine Assessment Program for Protected Species (AMAPPS). Atlantic waters off of Maine, Massachusetts, and Nova Scotia.

Aircraft is conducting the Northeast Atlantic Marine Assessment Program for Protected Species (AMAPPS). This multi-year survey will serve multiple objectives with respect to marine mammal conservation: 1) provide distribution and abundance of all species of cetaceans, seals, and sea turtles for the spring which will be used to develop spatially and temporally-specific density maps that will be available to other agencies and the public; 2) provide photo-identification records on Right whales, and 3) provide sightings of dead whales. The AMAPPS survey is a cooperative effort between NMFS's Northeast and Southeast Fisheries Science Centers. In mid-January, the aircraft will transition to the Southeast portion of the survey.

Twin Otter (N57RF)

Aircraft Commander: LCDR Nicholas Toth
Temporary Base: Hyannis, MA
Current Mission: Northeast Right Whale Survey – Atlantic waters off of Maine and Massachusetts

Aircraft will conduct a survey of the North Atlantic Right Whale, off the New England coast. This survey will serve multiple objectives with respect to marine mammal conservation: 1) provide locations of North Atlantic right whales to mariners, 2) provide description of right whale distribution to support the implementation of seasonal and dynamic area management, 3) provide annual photo-identification records on right whales, as well as detailed vertical photogrammetry in selected periods, 4) provide information on the distribution and abundance of marine mammals and marine turtles in the winter, spring, summer and fall seasons, 5) provide sightings of dead whales, 6) provide information on the distribution of shipping and fishing gear, and 7) census seal populations along the New England coast. At the end of January, the aircraft will undergo a scheduled corrosion inspection.

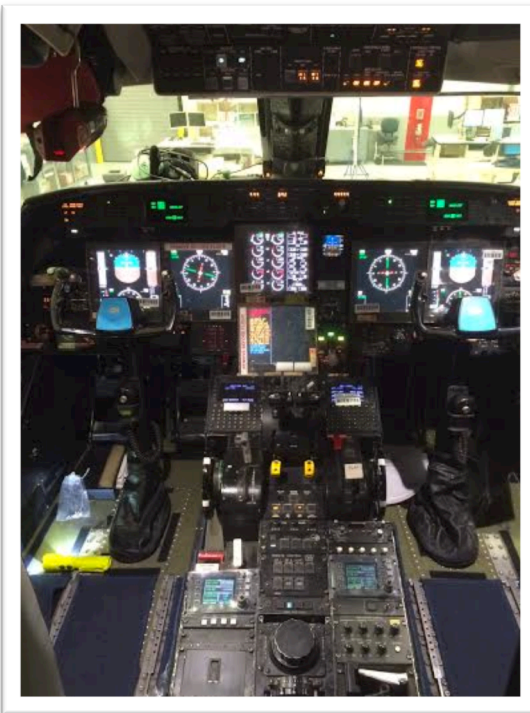
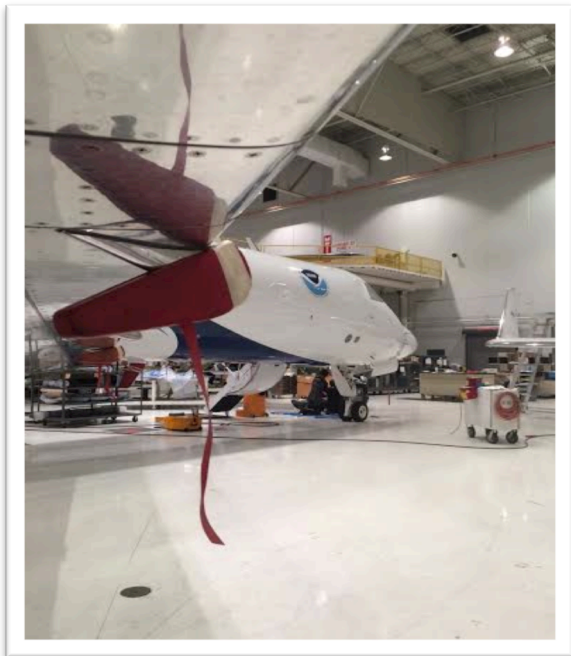
Gulfstream IV (N49RF)

Aircraft Commander: LCDR Jason Mansour and LT Ronald Moyers
Temporary Base: Sacramento, CA
Current Mission: CALWATER 2 Mission

CALWATER 2 Mission will measure aerosol (solid or liquid air particles suspended in air) plumes and their interaction with atmospheric rivers off, near and on coastal and inland environments. Atmospheric rivers are a direct source of precipitation to the west coast of the United States.

A better understanding of Atmospheric Rivers (ARs) and Aerosols is needed to reduce uncertainties in weather predictions and climate projections of extreme precipitation and its effects, including the provision of beneficial water supply. In the [CalWater2 White Paper](#), science gaps are identified associated with (1) the evolution and structure of ARs, (2) the prediction of aerosol burdens and properties during intercontinental transport from remote source regions to the U.S. West Coast, and (3) aerosol interactions with ARs and the impact on precipitation, including locally generated aerosol effects on orographic precipitation along the U.S. West Coast. A set of science investigations are proposed to fill these gaps with a targeted set of aircraft and ship-based measurements and associated evaluation of data over regions offshore of California and in the central and eastern Pacific for an intensive observing period.

Operational partners include NASA, National Science Foundation (NSF), Department of Energy (DOE) and UC San Diego. NOAA research operational platforms include NOAA WP-3D and NOAA G-IV aircraft, as well as NOAA Ship *Ronald H. Brown*.



Before the Calwater 2 Mission, Gulfstream IV received avionics and communication upgrades.
[Photo credits: LCDR Jason Mansour]

The new graphical display capability of PlaneDeck™ improves flight safety and comfort by providing advanced situational awareness cues for the pilot, a video display capability for on-board cameras (including an Enhanced Vision System), and optional XM® graphical weather. These additional graphical cues significantly reduce the pilot's scan and data assimilation time facilitating quicker decisions and smoother transitions to changing flight profiles due to weather or air traffic control.' (as quoted from the PlaneDeck product .pdf located at: [Gulfstream PlaneDeck \(Primus Elite™ 885\) for GIV](#)).

This avionics upgrade affords the crew with increased situational awareness, moving map and approach plate electronic overlay, improved display reliability and a weight savings of ~50 lbs.

Another upgrade is the installation of Radio Tuning Units (RTU). These devices incorporate a complete set of radio management functions into a single unit. It provides a convenient means of selecting frequencies, codes, channels, operating modes and volume levels for all Rockwell Collins Pro Line II, Pro Line IV and Pro Line 21 CNS sensors and the HF-9000. The application of the RTU provides enhanced reliability and simplified user/machine interface. Other key benefits are reduced radio control panel space and the ability to install optional radios without requiring additional controllers. Since all radios are managed by the RTU, one common control scheme and philosophy may be utilized, resulting in reduced pilot workload and training. (as quoted from [RTU 4210/4220 Upgrade Program - Rockwell Collins](#)).

WP-3D (N43RF)

Aircraft Commander:	CDR Mark Sweeney
Temporary Base:	Sacramento, CA
Current Mission:	Scheduled maintenance and upgrades/ CALWATER 2 Mission

Aircraft will undergo scheduled maintenance and systems upgrades until mid January. It will then begin the CALWATER 2 Mission, described above, off the west coast, collecting data on atmospheric conditions between Hawaii and California. The objectives of this project are improved understanding of atmospheric river structure, lifecycle, impact on US west coast due to precipitation and flooding, as well as improved forecast capability for Atmospheric River events.

King Air (N68RF)

Aircraft Commander:	CAPT Adam Dunbar and LT Tanner Sims
Current Mission:	Various Locations – Continuous Coastal Mapping

King Air will undergo paint work at the beginning of the month and then conduct Coastal Mapping mission flights in various locations. The Coastal Mapping work is an on-going mission, run by the Remote Sensing Division of the National Geodetic Survey (NGS), with the goal of providing a regularly-updated national shoreline for supporting marine navigation, defining territorial limits, and managing coastal resources. Stereo photogrammetry and LiDAR are used to produce a digital database for a national shoreline.



Unmanned Systems Support



NASA Global Hawk

Location: Edwards Air Force Base (AFB), CA

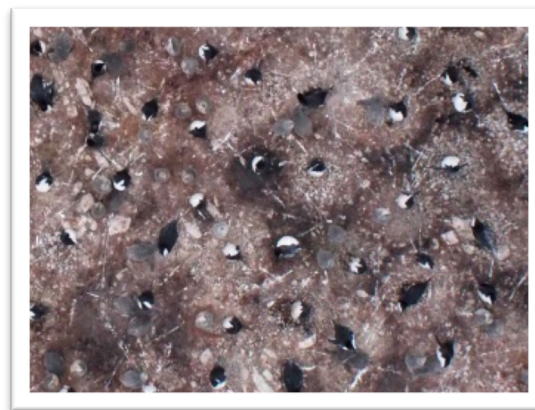
One of NASA's Global Hawks is currently being instrumented for a multinational science campaign. The Coordinated Airborne Studies in the Tropics project, or CAST, will carry eight payloads (two from NOAA) operating out of Edwards AFB to the equatorial region for atmospheric profiling. Science flights will begin in late February and conclude in March of 2015. A NOAA Corps officer, LCDR Jonathan Neuhaus, will be participating as a pilot and project manager.

APH-22 Hexacopter

Location: Antarctica – Cape Shirreff, Livingston Island and Copacabana Field Camp, King George Island

Mission: Aerial Survey of Penguin Colonies and Fur Seals

The Southwest Fisheries Science Center (SWFSC) has successfully used the APQ-16 and APH-22 in field seasons from 2010 to 2014, and continues this effort this year from Cape Shirreff Field Station in Antarctica. SWFSC also plans to expand the aerial survey work to include routine monitoring flights conducted at a second research site in Antarctica at the US AMLR program's seabird monitoring project at the Copacabana Field Camp in Admiralty Bay on King George Island. This season's efforts from Copacabana Field Camp will focus on collecting replicate counts of penguin chicks for Adélie, Gentoo, and Chinstrap penguins and establishing base line photo mosaics of colony locations and sizes in a rapidly changing colony of penguins. Integrated within these missions will be a set of controlled, decreasing-altitude flights to establish the affect, if any, that these flights have on wild animal populations. This season's efforts from Cape Shirreff will focus on collecting replicate counts of breeding pairs and chicks for Gentoo and Chinstrap penguins, Antarctic fur seal pup counts, and defining the relationship between mass of leopard seals and their size and shape as determined from vertical aerial photographs.



Images from a Hexacopter, used by the Southwest Fisheries Science Center UAS Program, of fur seals and penguins.

[Photo: NOAA]

Manta

Location: Yakima Testing Range, Washington

Mission: Manta Platform Payload Evaluation

PMEL successfully executed atmospheric research missions with the Manta airframe in Svalbard, Norway in 2011. Platform evaluation has continued in April 2014, with two separate Manta systems deployed in Yakima, WA. This next phase of evaluation will also take place in the Yakima Testing Range and serve to demonstrate the capabilities of the new aerosol payloads by intercomparison with ground-based instruments located at the runway. Secondary objectives are to train scientific personnel in the operation of the payloads under flight conditions.

In Development: Center of Excellence for Unmanned Technologies

Location: Avon Park, FL

Mission: Platform Testing and Evaluation

The Office of National Marine Sanctuaries (ONMS) is currently developing a Center of Excellence for Unmanned Technologies to partner with universities, research agencies and manufacturers to develop and test payloads and platforms for meeting a variety of Sanctuary and NOAA requirements. This project is a demonstration and evaluation of a variety of UAS platforms and payloads to meet coastal mapping, and habitat mapping and characterization missions. Platforms currently planned for evaluation include the AeroVironment Puma AE with three distinct payloads, the Altavian Nova F6500, the SenseFly eBee, and the DJI Phantom 2.



OMAO Partnerships



United States Senate Committee on Commerce, Science, and Transportation – Office of Ranking Member, Senator John Thune (R-SD)

Location: Washington, DC

Detail: LCDR Wendy Lewis, NOAA Commissioned Officer Corps

LCDR Lewis is currently on detail to the Committee and the office of Ranking Member Thune where she will be assisting on activities pertaining to oceans, atmosphere, and fisheries policy, as well as other matters within the Committee's jurisdiction

National Science Foundation

Location: Antarctica

Mission: LTJG Joe Phillips, NOAA Commissioned Officer Corps

Members of the [NOAA Commissioned Officer Corps](#) carry out NOAA's mission in remote locations across the globe. LTJG Phillips is assigned to Antarctica where he serves as the Station Chief for NOAA's Atmospheric Research Observatory (ARO) at the Amundsen-Scott South Pole Station. The ARO at the Amundsen-Scott South Pole Station is a National Science Foundation facility used in support of scientific research related to atmospheric phenomena.

Department of Defense - U.S. Pacific Command (USPACOM)

Location: Honolulu, HI

Embedded Liaison: CAPT Barry Choy, NOAA Commissioned Officer Corps

The U.S. Pacific Command (USPACOM) area of responsibility encompasses approximately half the earth's surface and more than half of its population. The 36 nations that comprise the Asia-Pacific include: two of the three largest economies and nine of the ten smallest; the most populous nation; the largest democracy; the largest Muslim-majority nation; and the smallest republic in the world. The region is a vital driver of the global economy and includes the world's busiest international sea lanes and nine of the ten largest ports. By any meaningful measure, the Asia-Pacific is also the most militarized region in the world, with seven of the world's ten largest standing militaries and five of the world's declared nuclear nations. Under these circumstances, the strategic complexity facing the region is unique. CAPT Choy is linked closely with the activities within the region allowing for identification of opportunities and cooperation between USPACOM and NOAA, and better overall government function situational awareness in the region.

Department of Defense - U.S. Northern Command (USNORTHCOM)

Location: Boulder, CO

Embedded Liaison: CAPT Mark Moran, NOAA Commissioned Officer Corps

U.S. Northern Command (USNORTHCOM) partners to conduct homeland defense, civil support, and security cooperation to defend and secure the United States and its interests. NORTHCOM's area of responsibility includes air, land, and sea approaches and encompasses the continental United States, Alaska, Canada, Mexico, and the surrounding water out to approximately 500 nautical miles. It also includes the Gulf of Mexico, the Straits of Florida, and portions of the Caribbean region that include The Bahamas, Puerto Rico, and the U.S. Virgin Islands. CAPT Moran serves as the liaison for the NOAA Corps, helping to plan, organize, and execute homeland defense and civil support missions.

Department of Defense - U.S. Navy

Location: Washington, DC

Embedded Liaison: CDR Christiaan van Westendorp, NOAA Commissioned Officer Corps
The NOAA liaison to the Oceanographer of the Navy serves as the Head of the Interagency Policy Branch of the International and Interagency Policy Division, Office of the Oceanographer of the Navy, located at the U.S. Naval Observatory. The mission of this Division is to coordinate and execute the Oceanographer of the Navy functions related to policy and programs involving international and/or interagency oceanography. Oceanography includes meteorology, oceanography, mapping, charting and geodesy, astronomy, and precise time and time interval. Starting in July, CDR van Westendorp will serve as the interface for the Oceanographer of the Navy between Navy and U.S. Federal Agencies including NOAA.

Department of Defense - U.S. Navy

Location: Stennis Space Center, MS

Embedded Liaison: LT Jonathan French, NOAA Commissioned Officer Corps
Embedded in the Navy's Naval Oceanography Mine Warfare Center, LT French works side by side with Navy officers operating Unmanned Underwater Vehicles (UUV)s worldwide and is currently deployed to the Arabian Gulf. This collaboration will provide knowledge and experience that will keep NOAA on the cutting edge of this emerging technology as well as strengthen the partnership between NOAA and the Navy.

Department of Defense and NOAA's Office of Coast Survey

Location: Silver Spring, MD

Embedded Liaison: CDR Matthew Wingate, NOAA Commissioned Officer Corps
NOAA's National Ocean Service Office of Coast Survey (OCS) is the lead federal provider of nautical charts and hydrographic survey data of the U.S. Exclusive Economic Zone. Meeting this responsibility requires active cooperation and coordination with federal partners in the Departments of Defense and Homeland Security with which NOAA shares responsibility for U.S. navigational products and services. CDR Wingate tracks, coordinates, and adds value to existing activities involving OCS subject matter experts and partners, seeks and develops additional opportunities for collaboration, and increases visibility and access to these activities and partnerships for OCS leadership.

Department of Homeland Security - U.S. Coast Guard

Location: Washington, DC

Embedded Liaison: CAPT Jeremy Adams, NOAA Commissioned Officer Corps
As the NOAA liaison to the United States Coast Guard (USCG), CAPT Adams maintains a current and comprehensive knowledge of interagency activities and policies related to the USCG and NOAA. He identifies potential conflict or benefit issues for analysis and evaluation, conducts appropriate assessments and studies, and serves as the interface between NOAA and the USCG. CAPT Adams initiates, designs, and implements strategies through federal agency liaison and coordination that results in cooperative arrangements for maritime security, oceanographic research, hazardous materials spill response, and many other activities.



Teacher At Sea Program



The mission of the Teacher at Sea (TAS) program is to give teachers a clearer insight into our ocean planet, a greater understanding of maritime work and studies, and to increase their level of environmental literacy by fostering an interdisciplinary research experience. The program provides a unique environment for learning and teaching by sending kindergarten through college-level teachers to sea aboard NOAA research and survey ships to work under the tutelage of scientists and crew. Then, armed with new understanding and experience, teachers bring this knowledge back to their classrooms. Since its inception in 1990, the program has enabled more than 600 teachers to gain first-hand experience of science and life at sea. By participating in this program, teachers enrich their classroom curricula with knowledge that can only be gained by living and working side-by-side, day and night, with those who contribute to the world's body of oceanic and atmospheric scientific knowledge. Below is a list of the NOAA Teachers at Sea for the current monthly update for the 2014 Field Season. Once they have embarked on their cruise, you can gain access to their blogs which document their missions at sea and offer a wealth of information about the research being conducted as well as personal stories. More info: <http://teacheratsea.noaa.gov>

2014 TAS Placements Blogs – <http://teacheratsea.noaa.gov/2014/index.html>

2014 NOAA Teacher at Sea Year in Review Report published online 01/09/15
<http://teacheratsea.noaa.gov/about/highlights.html>

January 15, 2015 - *Thomas Jefferson* Survey Technician, Rita Bowker co-presenting with Dr. Laura Guertin's (TAS, 2014) at Penn State Brandywine - <http://brandywine.psu.edu/events.htm>



OMAO - NOAA Dive Program



OMAO manages and implements NOAA's Dive Program (NDP), which trains and certifies scientists, engineers, and technicians from federal, state, tribal governments, and the private sector to perform the variety of tasks carried out underwater to support NOAA's mission. NDP also has cooperative diving agreements with over 100 government agencies and academic institutions. NOAA has more than 400 divers who perform over 14,000 dives per year. The NDP is headquartered at the NOAA Diving Center at the NOAA Western Regional Center in Seattle, Washington. http://www.ndc.noaa.gov/gi_program.html



NOAA Diver Paula Whitfield has been studying the ecological impact of the lionfish invasion on ecosystems in the Atlantic since sightings in 2000. Read more about her research and her experiences conducting lionfish surveys at <http://1.usa.gov/14wMPxn> and check out the new Invasive Lionfish Web Portal created by the [National Oceanic and Atmospheric Administration \(NOAA\)](#) and the [Gulf and Caribbean Fisheries Institute \(GCFI\)](#) for the newest information! (<http://lionfish.gcfi.org/index.php>)

[Photo Credit: NOAA]



OMAO - NOAA Small Boat Program

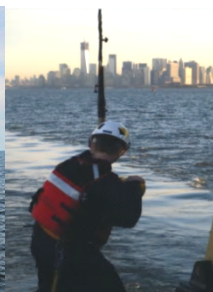


OMAO sets policy and provides safety inspections for almost 400 small boats operated by the various Line and program offices throughout NOAA, which support fisheries laboratories, dive support, nautical charting, ocean and Great Lakes research, and more. More info: <http://www.sbp.noaa.gov/>



NOAA small boats support many diverse operations across the country.

[Photo Credits: NOAA]



Office of Marine and Aviation Operations

Providing environmental intelligence for a dynamic world.



The personnel, ships, and aircraft of NOAA play a critical role in gathering environmental data vital to the nation's economic security, the safety of its citizens, and the understanding, protection, and management of our natural resources. The NOAA fleet is managed and operated by the Office of Marine and Aviation Operations (OMAO), an office comprising civilians, mariners, and officers of the NOAA Commissioned Officer Corps, one of the seven uniformed services of the United States. NOAA's roots trace back to 1807, when President Thomas Jefferson ordered the first comprehensive coastal surveys. Those early surveys ensured safe passage of ship-borne cargo for a young nation. As the needs of the nation have grown, so too have OMAO's responsibilities. Today, OMAO civilians and NOAA Corps officers operate, manage, and maintain NOAA's active fleet of 16 research and survey ships and 9 specialized aircraft. Together, OMAO and the NOAA Corps support nearly all of NOAA's missions.

NOAA has the largest fleet of civilian research and survey ships in the nation. The fleet ranges from large oceanographic ships capable of exploring and charting the world's deepest ocean, to smaller vessels responsible for surveying the shallow bays and inlets of the United States. The fleet supports a wide range of marine activities including fisheries surveys, nautical charting, and ocean and climate studies. Based throughout the continental United States, Alaska, and Hawaii, the ships operate in all regions of the nation and around the world. NOAA's aircraft provide a wide range of airborne capabilities. Our highly specialized Lockheed WP-3D turboprop "hurricane hunter" aircraft are equipped with an unprecedented variety of scientific instrumentation, radars, and recording systems for both in situ and remote sensing measurements of the atmosphere, the Earth, and its environment. Together with NOAA's Gulfstream IV-SP hurricane surveillance jet, these aircraft greatly improve our physical understanding of hurricanes and enhance the accuracy of tropical cyclone forecasts. NOAA's light aircraft also play a vital role in monitoring our environment. Our King Air, Commander and Twin Otter aircraft support marine mammal population studies, shoreline change assessments, oil spill investigations, and snowpack surveys for spring flood forecasts.

The NOAA fleet provides immediate response capabilities for unpredictable events. For example, after Hurricane Sandy, NOAA ships *Thomas Jefferson* and the newly commissioned *Ferdinand R. Hassler* conducted emergency bathymetric surveys to locate possible submerged navigational hazards in the ports of New York and Virginia. These surveys enabled the ports to reopen quickly. Aerial images of storm-stricken regions, taken by NOAA aircraft, helped residents and emergency workers to quickly assess the condition of houses, bridges, and vital infrastructure.

In 2011, OMAO's Aero Commander and Jetprop Commander aircraft conducted snow surveys, which increased the accuracy of National Weather Service's flood forecasting during a record year of snow and floods. In 2010, the NOAA fleet and the NOAA Corps played a major role in the response to the BP Deepwater Horizon oil spill, conducting extensive studies in the Gulf of Mexico to monitor the health of the ecosystem. NOAA's entire Atlantic fleet and over a quarter of the total strength of the NOAA Corps were deployed to the Gulf following the spill, developing mission plans and assisting response efforts.

While manned aircraft and sea-going vessels have been, and will continue to be, a primary source of environmental data, new technology will have a significant role to play in the future NOAA fleet. OMAO, in coordination with other NOAA offices and federal agencies, is evaluating and deploying remotely piloted underwater and aircraft systems that could significantly contribute to environmental observations. OMAO's ongoing challenge is to meet the growing demand for *in situ* scientific data while providing the highest level of service. As NOAA's fleet continues to age, maintenance costs steadily increase. Operational costs have increased as well, driven largely by rising fuel costs. To better serve the needs of the nation, NOAA is examining the composition of the fleet through an exhaustive and critical review of at-sea science and observation requirements. Our objective is to develop a clear, cost-efficient path forward to ensure that the NOAA fleet can continue to conduct at-sea surveys and research vital to fisheries management, updating nautical charts, responding to natural and manmade disasters, and understanding coastal and marine systems more fully. Meeting these requirements is essential to developing sustainable, science-based management and conservation plans that protect the health and resiliency of these resources over the long-term.

We are also continuing our effort to build a civilian and NOAA Corps officer work force that is uniquely qualified to gather critical environmental intelligence and be adaptive and responsive to a changing world. We transitioned our basic NOAA Corps officer training class to the U.S. Coast Guard Academy, where newly commissioned officers train alongside Coast Guard officer candidates, developing skills and professional relationships that will benefit both services, especially during challenging times.

Finally, we continue to expand our partnerships with other federal agencies. We are proud of our longstanding and fruitful working relationships with the U.S. Air Force, U.S. Coast Guard, U.S. Navy, and U.S. Public Health Service and through the Interagency Working Group on Facilities and Infrastructure, continue facilitating cross-agency cooperation for the federal fleet of research and survey ships. Active collaboration among the Federal family is critical to ensuring the long-term capability and success of the federal ocean infrastructure. Our partners' success is our success.



NOAA Commissioned Officer Corps



– Supporting NOAA’s Science, Service, and Stewardship –

The NOAA Commissioned Officer Corps (NOAA Corps) is one of the nation’s seven uniformed services and serve with the ‘special trust and confidence’ of the President. NOAA Corps officers are an integral part of the National Oceanic and Atmospheric Administration (NOAA), an agency of the U.S. Department of Commerce. With 321 officers, the NOAA Corps serves throughout the agency’s line and staff offices to support nearly all of NOAA’s programs and missions. The combination of commissioned service and scientific expertise makes these officers uniquely capable of leading some of NOAA’s most important initiatives.

The NOAA Corps is part of NOAA’s Office of Marine and Aviation Operations (OMAO) and traces its roots back to the former U.S. Coast and Geodetic Survey, which dates back to 1807 and President Thomas Jefferson. In 1970, NOAA was created to develop a coordinated approach to oceanographic and atmospheric research and subsequent legislation converted the commissioned officer corps to the NOAA Corps.

The NOAA Corps today provides a cadre of professionals trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. Corps officers operate NOAA’s ships, fly aircraft, manage research projects, conduct diving operations, and serve in staff positions throughout NOAA.

Benefits of the NOAA Corps to the Nation

The combination of commissioned service with scientific and operational expertise, allows the NOAA Corps to provide a unique and indispensable service to the nation. NOAA Corps officers enable NOAA to fulfill mission requirements, meet changing environmental concerns, take advantage of emerging technologies, and serve as environmental first responders. For example:

- In 2012 after Hurricane Sandy, seafloor sonar surveys completed by NOAA ships and small boats helped reopen Baltimore and Virginia ports, quickly restarting commerce and allowing Navy ships to return to port. New York and New Jersey ports were reopened, enabling emergency supplies to reach some of the hardest-hit areas. Maritime traffic resumed more quickly because NOAA embedded regional navigation managers within command centers.
- Hours after Sandy, NOAA planes and scientists conducted aerial surveys of the affected coastlines and immediately published the photos online, allowing emergency managers and residents to examine the damage even before ground inspections were permitted. These surveys are also vital to FEMA assessment teams and other on-the-ground responders and those managing oil spill clean-up and damage assessment. Over 3,000 miles of coastline have been surveyed, and over 10,000 images processed to document coastal damage and impacts to navigation.
- In 2011, OMAO’s Aero Commander and Jetprop Commander aircraft conducted snow surveys, which increased the accuracy of National Weather Service’s River Forecast Centers flood forecasting during a record year of snow and floods.

- After Hurricane Irene in 2011, the NOAA Ship *Ferdinand Hassler* and team completed 300 lineal nautical miles of survey work in less than 48 hours providing a Damage Assessment that enabled the U.S. Coast Guard to re-open ports and restore more than \$5M per hour in maritime commerce less than 3 days after the storm.
- More than 80 officers, or a quarter of the NOAA Corps' total strength, were re-assigned and/or deployed to support the Deepwater Horizon disaster response in the Gulf in 2010.
 - Eight NOAA-owned vessels, or the entire Atlantic fleet, were also deployed to the Gulf of Mexico for spill response, as well as several aircraft.
- NOAA Corps officers who run NOAA's Ships support fish stock and marine mammal assessments, marine ecosystem studies, ocean exploration, coral reef preservation and protection, and mapping and charting around the United States and the Arctic, and more.
- NOAA Corps officers who run NOAA's Aircraft collect environmental and geographic data essential to studying climate change, assess marine mammal populations, survey coastal erosion, investigate oil spills, and improve hurricane and winter storm forecasts as they pilot the WP-3D Orion hurricane hunters and other aircraft that fly through, and above the storms to obtain critical forecasting data.

Find out more about the NOAA Corps, its mission and history at <http://www.noaacorps.noaa.gov/>.



Graduating class of U.S. Coast Guard Officer Candidate School (OCS) 1-15 and NOAA Corps Basic Officer Training Class (BOTC) 124, November 2014.

OCS 2-15 and BOTC 125 commenced on January 6, Congratulations to our new recruits!

[Photo Credit: U.S. Coast Guard]